MEMORANDUM:

TO: Stephen E. West
Regional Administrator
Boise Regional Office

FROM: Robert E. Baldwin, Air Quality Engineer EIT
Boise Regional Office

SUBJECT: T2-000035, Crookham Company, Caldwell, Idaho
Technical Analysis, Proposed Tier II Operating Permit No. 027-00020
A permit for all the emission units located at the Crookham Company Facility

PURPOSE

The purpose of this memorandum is to satisfy the requirements of IDAPA 58.01.01 Sections 400 through 406 *(Rules for the Control of Air Pollution in Idaho)* for Tier II Operating Permits (OP).

PROJECT DESCRIPTION

This project is for the issuance of a Tier II OP for Crookham Company (Crookham), located in Caldwell, Idaho. The emissions sources of the facility are:

- Cyclones
- Baghouses
- Vehicle traffic

FACILITY DESCRIPTION

Crookham processes corn, and small amounts of onion and carrot seeds for farmers using batch processes. The main processing plant is located at 301 Warehouse Street, Caldwell, Idaho. Approximately 110 employees work at the plant.

Production (seed drying, treating and packaging) is seasonal, starting in September, with work usually completed the following March. Some parts of the operation process seed continually (24 hours/day, 7 days/week) during the production period. Other parts of the facility are operating 10 hours per day and 6 days per week. The estimated production time for the plant in an average year is about 840 hours.

Harvest material (un-husked corn, onion seed, and carrot seed) enters the receiving area of the plant by supplier-owned trucks. The material from the trucks is dumped and conveyed into storage bins located in the same receiving area. Approximately 10,000 tons of material is received each season.

The material is transferred from storage bins to the initial cleaning processes using one of 25 forklifts. The husker is fed from the hopper that received the material from the storage bins. The air emissions are ducted to two cyclones on the roof of the building. The cleaned material is placed in a storage bin and moved by forklift to the next step of drying, where it is placed into a hopper heated by natural gas.

The dried material is transported in a bin via forklift to a conveyor belt that feeds the sheller. This unit is operated at 400 revolutions per minute, which is needed for shelling. The shelled corn is transported via bins. The cobs are captured in a venturi and blown to a cyclone and settling chamber on the roof of the building.

The shelled material is transported to a scalper for secondary cleaning. Air emissions of particulate are treated in a baghouse and re-circulated into the building. The batches of material are transported to the sizing operation. The material is sorted by size. Eight separate cyclones clean the air exhausted from this process.

The sized material is transported to the warehouse and unloaded from the storage bins. Material is treated with fungicide, pesticide, and colorant in an enclosed process, prior to bagging for shipment. Baghouses clean the exhausted air from these operations. The product output from the plant is approximately 5,500 tons per season.

Each season Crookham will rent an 1800 horsepower diesel generator for use in case of power interruption. It is expected to be operated under 200 hours per season, if operated at all. This would qualify the generator to be exempt under IDAPA 58.01.01.221.01(d).

The Department of Environmental Quality (DEQ) is currently developing a PM_{10} Maintenance Plan to protect air quality and public health. Modeling analysis of Northern Ada County demonstrates potential noncompliance with the ambient air quality standards for particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}). The DEQ Boise Regional Office has identified Crookham as a facility that can assist DEQ in the development of a PM_{10} Maintenance Plan by cooperating with DEQ to develop a Tier II OP. Crookham was identified as a facility that did not have nor required an OP, but has a large quantity of allowable PM_{10} emissions not subject to permit limitations. For consistency with other permitted facilities with impacts to the Northern Ada County PM_{10} Maintenance Plan, the fugitive emissions had to be limited in the Tier II OP.

SUMMARY OF EVENTS

DEQ issued a certified letter on February 18, 2000, informing Crookham that DEQ will be issuing a Tier II OP limiting the facility's potential to emit. In addition, this letter stated the Tier II operating permitted limited emissions would be used in the modeling analysis to demonstrate National Ambient Air Quality Standard (NAAQS) compliance within the PM_{10} Maintenance Plan. The 1999 emission inventory from Crookham used in the Tier II analysis was received by DEQ on March 2, 2001. On July 12, 2001, DEQ received in the form of a Permit to Construct application some updated material for the Tier II OP.

DISCUSSION

1. Emission Estimates

   The emission estimates for Crookham are emitted primarily by the cyclones, baghouses, and vehicle traffic. The 1995 emission inventory indicated PM_{10} emissions of 14 tons per year and a potential to emit of 250 tons per year. The emission estimate stated within the Tier II application was 16.94 tons per year. The supplemental data supplied with the Tier II application indicates that the 16.94 tons per year is 2.35 times the actual emissions. DEQ has estimated the PM_{10} emissions for the Tier II OP to be less than 6.0 tons per year. The OP allows a throughput of 14,000 tons of material to enter the process.

   The vehicle traffic emissions of PM_{10} are considered to be very small since a majority of the traffic area is paved and most traffic takes place within a warehouse.

   A spreadsheet of the emission analysis for Crookham is located in the Appendix.

2. Modeling

   DEQ staff performed modeling on this facility under the emissions quoted by Crookham in the 1995 emission inventory. Crookham stated that the actual PM_{10} emissions for the operational year of 1995 were 14 tons. The guidance issued by Boise Regional Office indicates that certain facilities (of which Crookham is one) could be permitted if future emissions were less than a 20 percent increase of their 1995 actual PM_{10} emissions. Analysis indicates that Crookham permitted emissions and throughput limits will reduce the PM_{10} emission to less than half of the 1995 estimated actuals. This limit reduction meets the guidance and the modeling requirement of the Northern Ada County PM_{10} Maintenance Plan.

3. Area Classification

   Crookham, in Canyon County, Idaho, is located in Air Quality Control Region 64 and Zone 11. The area is classified as attainment or unclassifiable for all federal and state criteria air pollutants (PM_{10}, nitrogen oxides, volatile organic compounds, carbon monoxide, and sulfur oxides).

4. Facility Classification

   Crookham is not a designated facility as defined in IDAPA 58.01.01.006.25. Crookham is classified as a synthetic minor source because the potential emissions of any criteria pollutant could exceed 100 tons per year.

5. Regulatory Review

This OP is subject to the following permitting requirements:

a.	IDAPA 58.01.01.401	Tier II Operating Permit
b.	IDAPA 58.01.01.403	Permit Requirements for Tier II Sources
c.	IDAPA 58.01.01.404.01(c)	Opportunity for Public Comment
d.	IDAPA 58.01.01.404.04	Authority to Revise or Renew Operating Permits
e.	IDAPA 58.01.01.406	Obligation to Comply
f.	IDAPA 58.01.01.470	Permit Application Fees for Tier II Permits
g.	IDAPA 58.01.01.625	Visible Emission Limitation
h.	IDAPA 58.01.01.650	General Rules for the Control of Fugitive Dust

6. AIRS

AIRS/AFS[1] FACILITY-WIDE CLASSIFICATION[2] DATA ENTRY FORM

Air Program Description	SIP[3]	PSD[4]	NESHAP[5]	NSPS[6]	MACT[7]	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
SO_2[8]	B					B	U-Unclassifiable
NOx[9]	B					B	U-Unclassifiable
CO[10]	B					B	U-Unclassifiable
PM_{10}[11]	SM					SM	U-Unclassifiable
PM[12]	SM					SM	U-Unclassifiable
VOC[13]	B					B	U-Unclassifiable
Total HAPs[14]							
(Add additional lines if necessary.)							
VE/FE/FD [15]	ND	ND	ND	ND	ND	ND	

1 **AIRS Aerometric Information Retrieval System**
2 **AIRS/AFS CLASSIFICATION CODES:**
- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant, which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds **if, and only if,** the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

3 State Implementation Plan
4 Prevention of Significant Deterioration
5 National Emission Standards for Hazardous Air Pollutants
6 New Source Performance Standards
7 Maximum Achievable Control Technology
8 Sulfur Dioxide
9 Nitrogen Oxides
10 Carbon Monoxide
11 Particulate Matter with an aerodynamic diameter less than or equal to nominal ten micrometers
12 Particulate matter
13 Volatile Organic Compounds
14 Hazardous Air Pollutants
15 VE/FE/FD (visible emissions, fugitive emissions, and fugitive dust) are entered for compliance purposes only and do not require evaluation by the permit engineer.

FEES

Fees apply to this facility in accordance with IDAPA 58.01.01.470. The facility is subject to permit application fees for this revised Tier II OP of $500.

RECOMMENDATIONS

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends that DEQ issue a proposed Tier II OP to Crookham Company. An opportunity for public comment on the air quality aspects of the draft OP shall be provided in accordance with IDAPA 58.01.01.404.01.c. Staff members have notified the facility in writing of the required Tier II application fee of $500.00. The permit will be issued upon receipt of the fee.

REB/DPS:cm **MASP TVMB 4005 480** g:\baldwin\tierii\Crookham\final\Crookham t2 tech memo3

cc: Faye Weber, Air Quality Division
DEQ Boise Regional Office
Source File (027-00020)
Reading File

APPENDIX A

Tier II Emissions

Crookham Company
P.O. Box 520
301 Warehouse Avenue
Caldwell, Idaho 83606

Contact: Gene Hibbard

Based on 14,400 Tons of received material for Processing
Based on 1209.6 hours of operation.
The above figures were derived from a high normal year with a 20% safety factor for hours and for throughput.

Source Combustion			MM BTU/hr	Year	MAX	criteria pollutants in tons per year				
	Combustion Hours		Size	Installed	Ft3 used	PM-10	N0x	S0x	C0	V0C
Burner	B1	1209.6	5	1979	6048000					
Burner	B2	1209.6	5	1979	6048000					
Burner	B3	1209.6	5	1996	6048000					
Burner	B4	1209.6	4.5	1987	5443200					
Burner	B5	1209.6	9	1986	10886400					
Burner	B6	1209.6	4.5	1987	5443200					
Burner	B7	1209.6	5	1981	6048000					
Burner	B8	1209.6	3.75	1983	4536000					
Burner	B9	1209.6	5	1981	6048000					
Burner	B10	1209.6	3.75	1983	4536000					
Burner	B11	1209.6	5	1981	6048000					
Burner	B12	1209.6	3.75	1983	4536000					
Burner	B13	1209.6	3.75	1983	4536000					
Burner	B14	1209.6	3.75	1983	4536000					
Burner	B15	1209.6	3.75	1983	4536000					
Burner	B16	1209.6	5	1983	6048000					
Burner	B17	1209.6	3.75	1983	4536000					
Totals					**95860800**	**0.575**	**4.793**	**0.003**	**4.026**	**0.264**

Since there are a wide variety of variables from moiture content to size, shape, color and desireability of seed the emissions for each process is only an estimate while the emission were determined from this estimated thruputs and the combined emission factor receiving and handling of a country grain elevators from AP-42 a compilation of emission factors approved by EPA.

Process Sources	Approx. Thruputs out Tons/year	Emm. Fac. AP_42 CH. 9	Emission before Controls Tons/year	Controls	estimated Efficiency	Emissions after Controls Tons/year
Receiving	14400	0.093	0.670	NA	0	0.670
Husker	7200	0.093	0.335	cyclone	70.4	0.099
Dryer	5184	0.093	0.241	NA	0	0.241
Sheller	4924	0.093	0.229	cyclone	66.2	0.077
Scalper	4678	0.093	0.218	baghouse	98.5	0.003
Sizing*	4445	0.093	0.207	cyclone	60.5	0.082
Electronic ID**	4001	0.093	0.186		0	0.186
Bagging	4001	0.093	0.186		0	0.186
Totals			**2.271**			**1.544**

* Worst case assuming the lowest efficiency cyclone for all material sized.
** Worst case assuming all seed processed went throught electronic identification.

cyclone and baghouse emissions
0.261
fugitive stack emissions
1.858

Vehicle Traffic

	% silt	ave speed	ave weight	% moisture	Day active	# of trips	dist./trip	% Control	Emission
Forklifts (25)	2.5	5	5.5	4	180	750	0.3	50	7787.4
Electric Cars	2.5	5	0.57		180	75	0.2	50	2.1
Sweepers	7.4	2	3.5		180	100	0.2	0	169.9
Product Delivery Tks	7.4		15.4		180	20	0.2	70	94.1
Employee Vans	7.4		4.2		180	60	0.2	70	40.2
Pickups	7.4		2.4		180	60	0.2	70	17.4
									8111.0

4.06

Facility Total with estimated fugitive emissions from mobile sources **8113.1**